

AIR PASSENGER SURVEY

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Aviation Passenger traffic San Francisco Bay Area

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San Francisco Bay Area, August 1975

Acknowledgments

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United Airlines
Western Airlines

Thank you.

The Metropolitan Transportation Commission

John C. Beckett, *MTC Chairman*
Paul C. Watt, *MTC Executive Director*

June, 1976

About the Regional Airport Planning Committee. The Regional Airport Planning Committee is a joint Committee formed by the Metropolitan Transportation Commission and Association of Bay Area Governments for the purpose of developing and maintaining a regional airport system plan for the San Francisco Bay Area. The Regional Airport Planning Committee provides a forum for discussing and bringing together the planning of the airlines, airport operators, and Federal, State, regional and local levels of government and government agencies. In addition, it provides the means to hear suggestions from air passengers who use the airports, persons who live near the airports, and persons who work at the airports. Readers of this report are encouraged to make their comments known to the Committee. Provisions have been made for revising the regional airport plan annually, based on citizen input and technical considerations.

Regional Airport Planning Committee Members:

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Graphic design and production was by

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A word of appreciation is in order for the many MTC staff members who worked on the Air Passenger Survey and without whose efforts and support this report could not have been written.

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Introduction

The Metropolitan Transportation Commission (MTC) is responsible for developing and refining a plan to guide the development of airport facilities in the nine-county San Francisco Bay Area. The Airport Element of the Regional Transportation Plan relates projected levels of air travel demand to the airport, highway, and transit facilities which will be required in the region to serve this potential demand. The Commission is concerned with how the airports and ground access system can be developed in a way which will provide efficient use of existing facilities, improve service to the airline passenger, minimize the air quality and noise impact of airport operations, and conserve scarce energy resources. The Commission is specifically interested in the following questions:

- *How have Bay Area growth patterns affected the demand for airline service and location of this demand within the region? Does the present airport "system" adequately serve the needs of residents of the Bay Area? What effect does visitor-generated air travel have on the development of the regional airports?*
- *What proportion of passengers originate in Marin, Napa, Solano, and Sonoma Counties? How can airline service be made more accessible to residents of the North Bay?*
- *If additional development of the Bay Area airports is required, which airports should be expanded, by how much, and in what time frame?*
- *What distribution of passengers to the regional airports minimizes the total ground access distance? What are the expected benefits of such airport systems in terms of reduced energy consumption and air pollution?*
- *What proportion of passengers could be more conveniently served by providing expanded domestic flight services at Oakland and San Jose Airports?*
- *How should transit improvements be planned and programmed at San Francisco, Oakland, and San Jose Air-*

ports? Should fixed guideway transit systems be built, to which airports, and in what time frame? How many persons will ride transit to the airports?

Between August 18 and August 24, 1975, the Metropolitan Transportation Commission conducted a week-long survey of passengers **departing** San Francisco, Oakland and San Jose Airports. This survey was performed with the cooperation and assistance of the airport operators, the airlines, and the California Department of Transportation which was responsible for obtaining traffic and vehicle occupancy counts.

Passengers on selected flights were interviewed in the airline boarding areas to determine where they came from, why they had chosen the particular airport from which they were leaving, and what mode of transportation they used to reach the airport.

This report provides a summary of air travel conditions in the Bay Area today. It must be pointed out that while one of the main purposes of this report is to address the airport access problem, the air passenger is only one facet of the overall problem. Of the total number of daily person-trips to the airport, the air passenger is responsible for only about 25%-30% of these trips. The remainder are made by airport employees, persons who accompany the passenger to the airport, and casual visitors.

Survey Design and Expansion of Data

A survey is required when either the desired information cannot be obtained through other means or the cost and time of doing so is excessive. The major steps involved in the air travel data collection process are highlighted below:

1. Define Data Requirements Fundamental portions of the existing air travel data base in the Bay Area are nearly eight years old. MTC began by discussing the data requirements with the potential users — the California Department of Transportation, the Federal Aviation Administration, the Airports, and the Airlines. The final survey questionnaire (see Appendix) reflects the diversified needs of these groups as well as those of MTC. The data will be used for purposes ranging from the theoretical to the pragmatic. For instance, from the data forecasts will be prepared which will indicate how many passengers will use the airports in the future and where they will originate. The information will also be used to evaluate the potential ridership of fixed guideway or other transit systems to the airports, and the information can be used by the airlines to better match flight locations and frequency with demand.

2. Determine Sample Size The amount of precision required, degree of acceptable risk, kinds of questions asked, amount of stratification, and anticipated response rate all enter into determining the required sample size. A total sample size of about 5000 interviews was selected after evaluating the desired accuracy ($\pm 2\%$) and confidence level (99.5%) required for the most demanding question, realizing that other questions would be over-sampled.

The most important concept involved in the design of the survey was that of stratifying the sample size by air travel zone. The number of passengers flying from the Bay Area Airports to Southern California, New York, Hawaii and other major destinations can be determined from data assembled by the Civil Aeronautics Board and California Public Utilities Commission. This information in turn can be used to determine the number of flights which should be sampled at each airport. The purpose in dividing the sample in this way

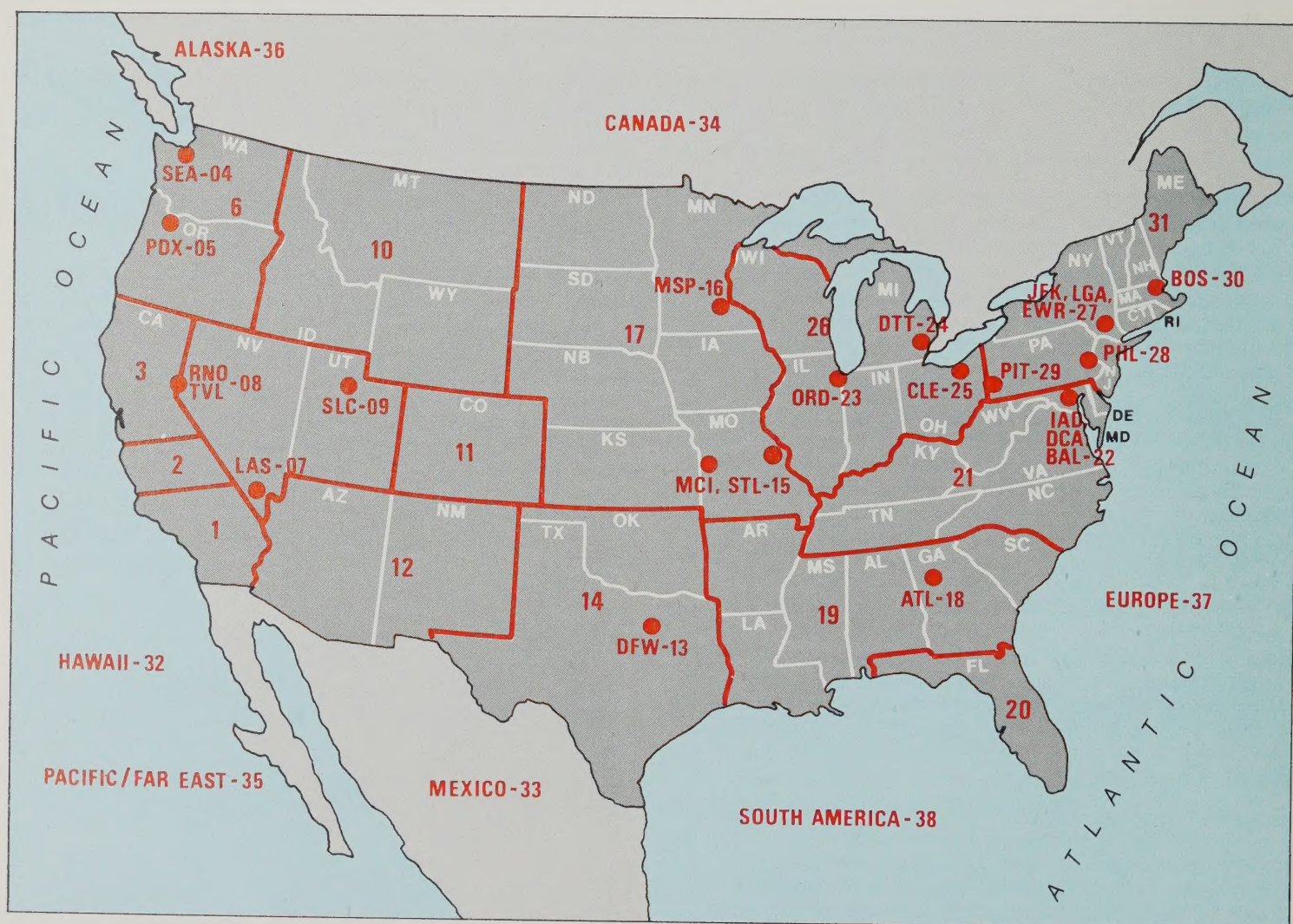
is to allow precise estimates to be made of travel characteristics within each air travel zone which can then be combined to produce an aggregate estimate which is more accurate than a simple sample of the same size. For instance, since the market to Southern California includes 35% of the traffic from the Bay Area, more samples should be collected in this market than say, in the New York market which accounts for only 6% of the air passengers.

It was also important to make sure that the number of interviews collected on a particular day or particular hour matched observed travel patterns. Based on these criteria, specific flights were identified to be sampled.


























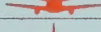




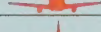
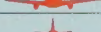
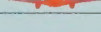
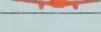


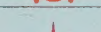


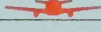














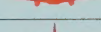

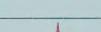
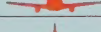


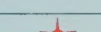


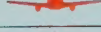
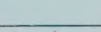







3. Develop Survey Strategy Discussions with the airlines resulted in the decision to interview departing passengers inside the boarding areas rather than to distribute questionnaires on board the planes. A week-long schedule was established at each airport for trained teams, usually consisting of three persons, to interview departing passengers. The airport operators made the necessary arrangements with the airlines to allow the survey personnel to conduct their interviews.

4. Expand Data and Tabulate Results Although the survey was accurately designed, expansion factors were used to arrive at the final results. Expansion factors — the ratio of the desired number of interviews in each air travel zone to the number of survey records actually obtained — have been applied to the following data so that it represents the best possible estimate of travel conditions in the Bay Area.

Air Travel Zones



Distribution of Passenger Traffic to Air Travel Zones

AIR TRAVEL ZONE NO.	GEOGRAPHICAL AREA COVERED	SINGLE CITY AIRLINE CODE	REGULARLY SCHEDULED AIRLINE SERVICE			% OF BAY AREA TRAFFIC
			SFO	OAK	SJC	
CALIFORNIA MARKETS						
1	SOUTHERN CALIFORNIA					35.3
2	CENTRAL CALIFORNIA					1.0
3	NORTHERN CALIFORNIA					1.9
DOMESTIC AND INTERNATIONAL MARKETS						
4	SEATTLE	• SEA				3.5
5	PORTLAND	• PDX				2.3
6	REST OF PACIFIC NORTHWEST					2.3
7	LAS VEGAS	• LAS				1.8
8	RENO/LAKE TAHOE	• RNO, TVL				1.9
9	SALT LAKE CITY	• SLC				1.9
10	IDAHO, WYOMING, MONTANA					.9
11	COLORADO					2.2
12	ARIZONA, NEW MEXICO					2.7
13	DALLAS/FT. WORTH	• DFW				1.2
14	OKLAHOMA, TEXAS					2.6
15	KANSAS CITY-ST. LOUIS	• MCI, STL				1.4
16	MINNEAPOLIS-ST. PAUL	• MSP				1.3
17	IOWA, KANSAS, MINNESOTA, MISSOURI, NEBRASKA, NORTH DAKOTA, SOUTH DAKOTA					1.1
18	ATLANTA	• ATL				.7
19	ALABAMA, ARKANSAS, GEORGIA, LOUISIANA, MISSISSIPPI, SOUTH CAROLINA					1.5
20	FLORIDA					1.3
21	KENTUCKY, MARYLAND, NORTH CAROLINA, TENNESSEE, VIRGINIA, WEST VIRGINIA					1.4
22	WASHINGTON DC/BALTIMORE	• IAD, DCA, BAL				2.8
23	CHICAGO	• ORD				3.6
24	DETROIT	• DTT				1.2
25	CLEVELAND	• CLE				.7
26	ILLINOIS, INDIANA, MICHIGAN, OHIO, WISCONSIN					2.4
27	NEW YORK/NEWARK	• JFK, LGA, EWR				6.1
28	PHILADELPHIA	• PHL				1.2
29	PITTSBURGH	• PIT				.6
30	BOSTON	• BOS				1.6
31	CONNECTICUT, DELAWARE, MAINE, MASSACHUSETTS, NEW HAMPSHIRE, N. JERSEY, NEW YORK, RHODE ISLAND, VERMONT					1.5
32	HAWAII					3.3
33	MEXICO					.8
34	CANADA					1.0
35	PACIFIC/FAR EAST					1.6
36	ALASKA					.3
37	EUROPE					.8
38	SOUTH AMERICA					.3
TOTAL						100.0

- As of August 1975
- 2-stop service or better required to be listed in table

Qualifications

Every survey requires an expression of qualifications which should be kept in mind when reviewing the data presented. The qualifications primarily relate to the time of year the survey was conducted and the manner in which the survey was conducted.

- As a general comment, the origination data developed in the survey was well within the expected confidence limits. For example, using simplified statistical procedures, it can be stated that we are 95% confident that the proportion of traffic originating in San Francisco City and County lies between 31% and 33% of the total traffic served by the Bay Area airports. Origin information in this report is presented by county. The amount of error can be expected to increase for the less populated counties because the actual sample sizes may be small. When aggregated to regional levels, however, the amount of error becomes insignificant.

- Certain segments of passenger travel were excluded from the survey. These segments included passengers on foreign flag carriers and passengers traveling on supplemental air carriers. These passengers, however, make up a small fraction of Bay Area traffic, and in most cases the passenger destinations could be sampled on a scheduled U. S. domestic flight.

- The month of August is historically the peak travel period during the year and is important in airport planning for this reason. Because August is a vacation month the number of non-business trips recorded was higher than would be expected during other months of the year. On an annual basis, about 50%-55% of the air trips are for business purposes. The August survey showed that only 40% of the trips were for business purposes compared to 60% for non-business purposes. This fact becomes important when viewing the combined access mode usage patterns for all travelers and when aggregating the air passenger origin locations.

- Student back-to-school travel was not a factor in the survey due to the early August survey date. Also, there were no large conventions during the survey period which would adversely affect the results.

- The San Francisco Bay Area is an appealing destination for vacationers, conventioners, and other tourists. The region, therefore, attracts more passengers than it generates. It was expected that the proportion of non-resident passengers would increase in August, however, the proportion of visitor travel was only slightly higher than a similar survey taken eight years ago in the spring of 1968. The distribution of passengers among the counties, however, reflected a larger share for San Francisco and San Mateo Counties. Although these two counties are major areas of activity for vacationers, tourists and visitors to San Francisco throughout the year, it is possible that their shares might have increased during August. The same qualifications stated above for business travel also apply to aggregated resident and non-resident passenger data. For these reasons, the following data is often reported separately by trip purpose and residency.

- Additional analysis will be required to adjust the data obtained to conditions representing a typical passenger month. This information is also useful for planning purposes.

- The survey strategy employed — that of interviewing departing passengers — does not affect the measurement of area originations, residency, trip purpose, etc., however, it does have a bearing on access mode usage information. Other surveys have shown that the choice of modes used by passengers leaving the airport may be different from those arriving at an airport and that the access mode usage patterns by time of day may also be dissimilar. Considering the overall purpose of the survey, however, this was an acceptable constraint.

Major Findings

1. Trip-Making Characteristics

F The proportion of business and non-business passengers and proportion of resident and visiting passengers varies significantly between the individual air travel zones.

S These travel characteristics play a key role in identifying the market for airline service and in projecting future growth in air travel. Changes in the economy, for instance, will affect the price sensitive non-business traveler to a greater extent than the business traveler.

F During the August survey, 36.3% of the passengers using the Bay Area airports were residents of the nine-county Bay Area, 59.1% were visitors, and 4.6% of the passengers lived in or were visiting adjacent counties outside the region.

S The regional airport plan recognizes the importance of providing convenient air service to the residents of the region. At the same time, future development plans for the regional airports and transit systems to serve them must take into account the origin and destination patterns and surface transportation needs of visiting air passengers since these passengers are responsible for a major portion of the travel in and out of the Bay Area airports. It is also important to note that the Bay Area airports provide airline service to a significant number of passengers originating outside the region.

F During the August survey, only 40.2% of the originating passengers were traveling on business trips.

S Half of the travel in the U. S. is made for business purposes, and except during vacation months, the amount of business travel usually exceeds that of non-business travel. The distinction between the two kinds of travel is important in determining the estimated number of air travelers in the future, in determining access mode preferences, and in providing effective surface transportation systems to the airports.

F On the average, business passengers were found to make over 6 times more annual air trips per person than non-business passengers.

S It has been stated in the past that a significant proportion of air travel is generated by a relatively small number of business travelers who fly comparatively frequently. This still appears to be true. Many non-business passengers were flying for the first time this year. Future traffic growth will be strongly influenced by the availability of low cost air fares and by the extent to which non-business travelers are attracted to air transportation.

F Passengers traveling for non-business purposes and passengers traveling outside California carry more luggage and have greater numbers of well-wishers accompanying them than do their counterparts.

S Characteristics such as these are important in defining the potential transit access market for air passengers. It has been thought that persons with a large amount of luggage or those having well-wishers accompanying them to the airport are less likely to use transit services.

F The proportion of non-business passengers and average number of persons accompanying the air passenger increases markedly on the weekends.

S This finding has greatest significance in terms of access mode usage since both of these characteristics imply a preference for the use of the personal automobile for airport access.

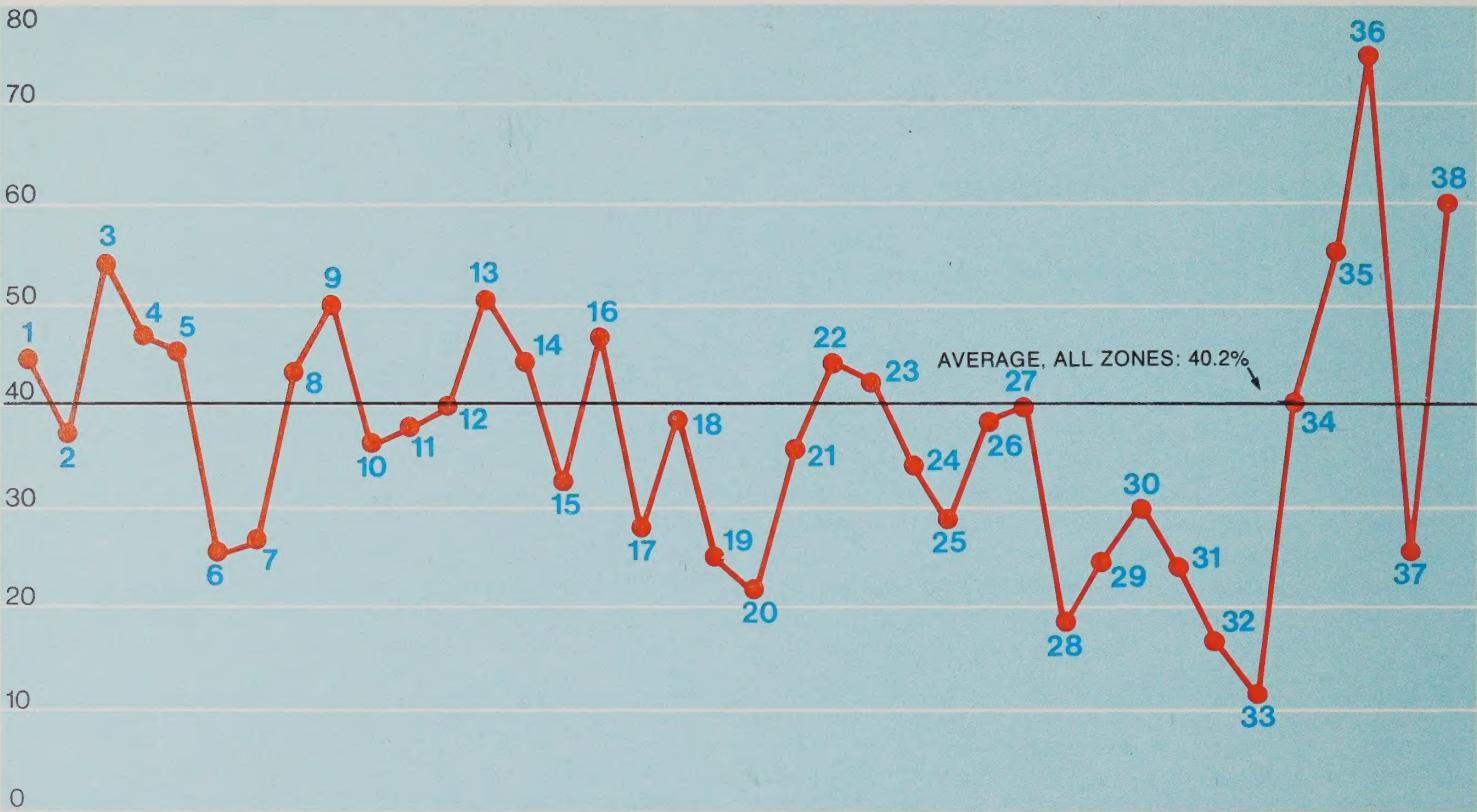
F There is little difference in household income levels between California passengers and Domestic and International passengers.

S Frequent service and low air fares have been responsible for much of the growth in intra-State travel. Because of the low air fares, it was thought that the proportion of passengers in the lower income levels would be larger in the California market than in the Domestic and International market; however, this was not true.

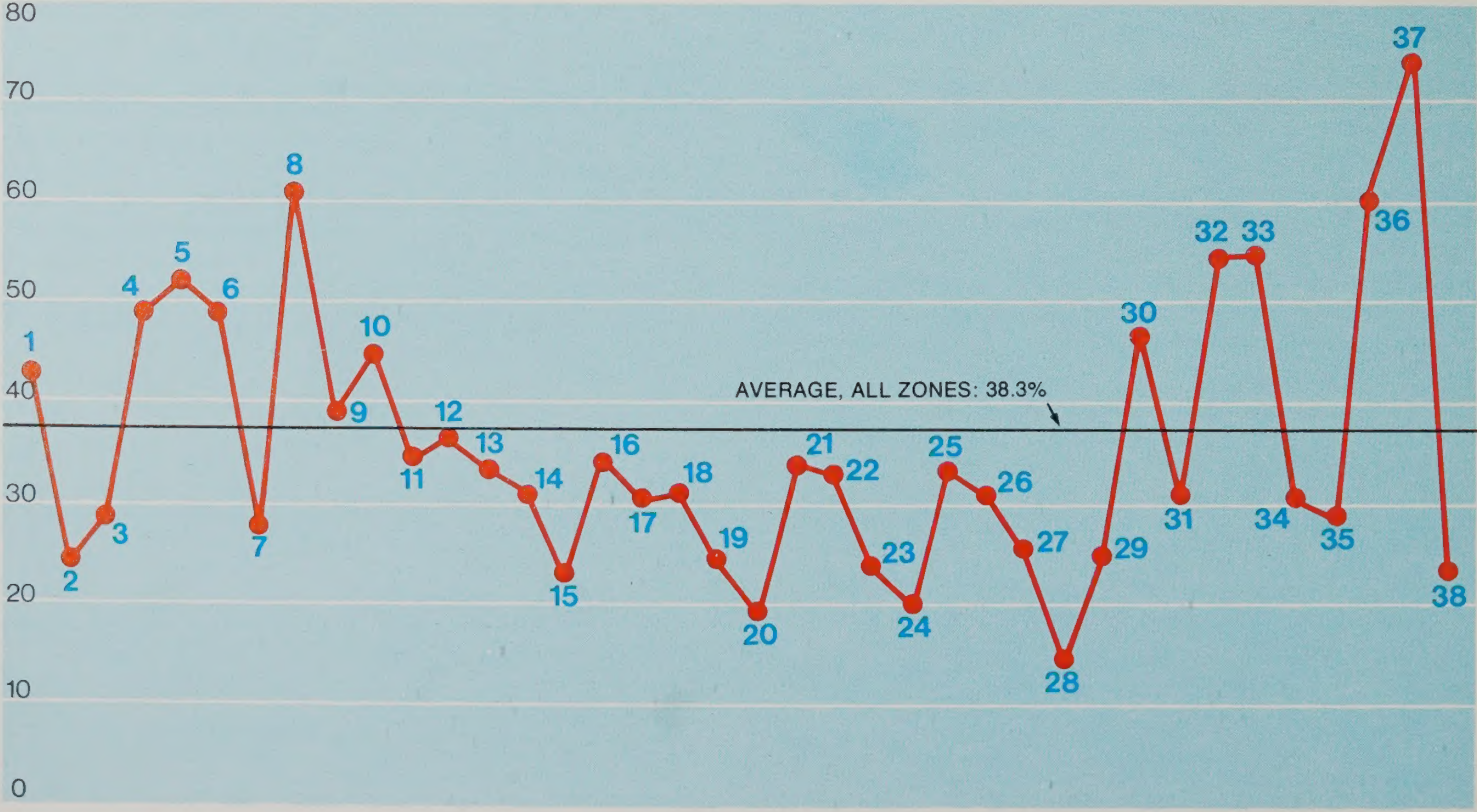
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S = Significance

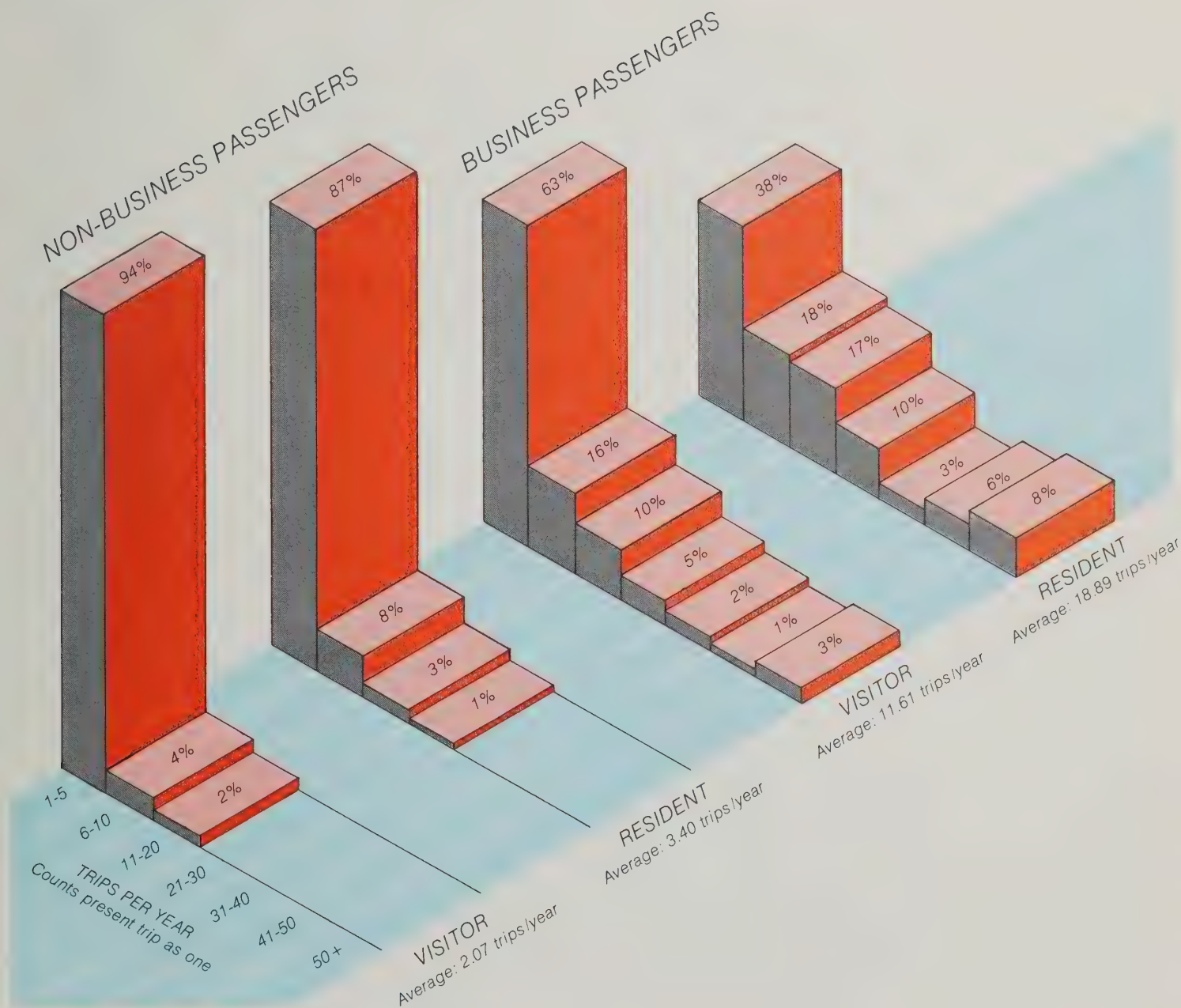
Percentage of Business Trips by Air Travel Zone



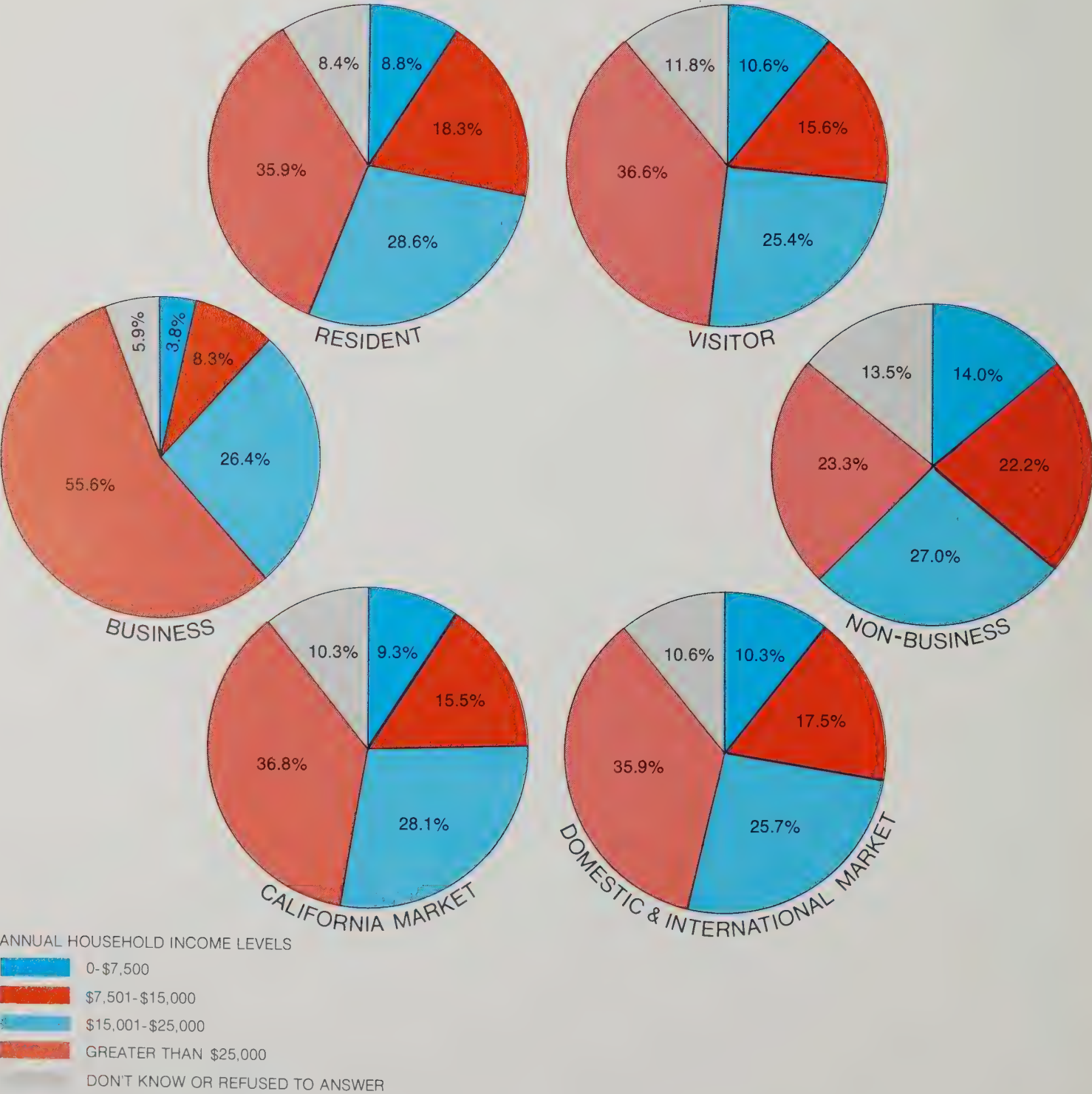
Percentage of Resident Trips by Air Travel Zone







Frequency of Trips from Bay Area



Proportion of Passengers by Household Income Levels

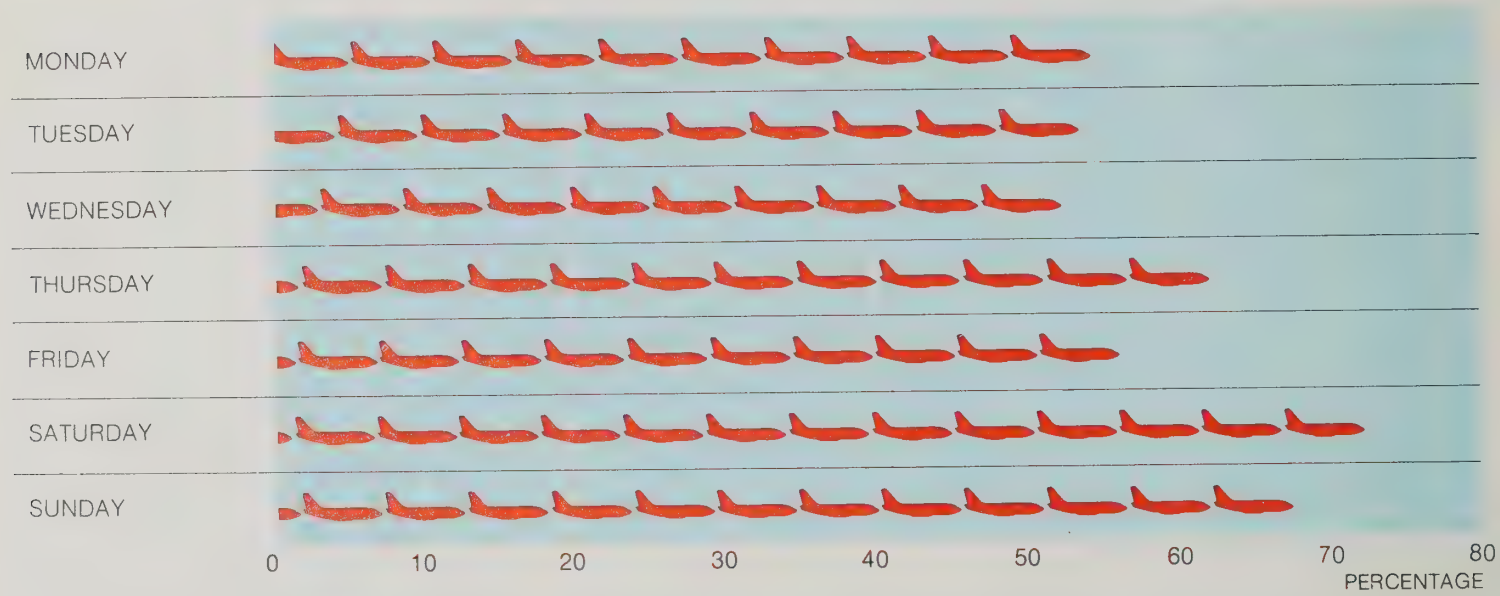


Number of Pieces of Luggage Carried and Number of Persons Accompanying Air Passengers to Airport

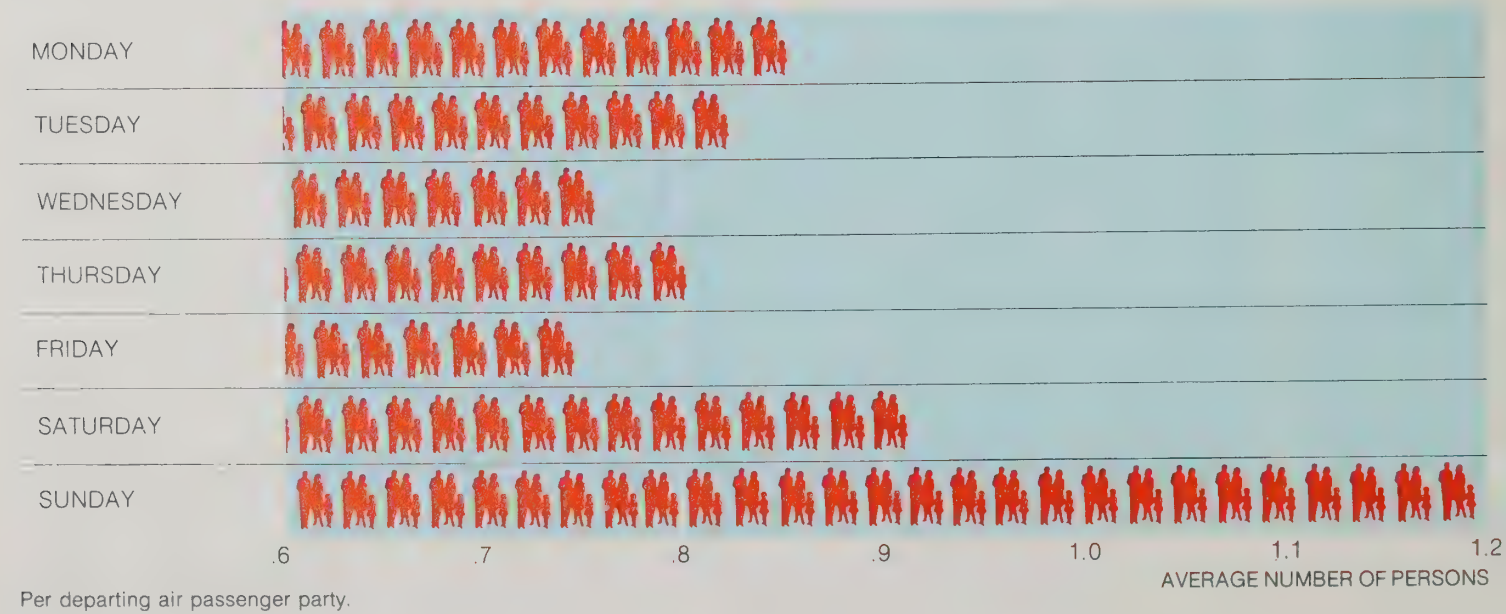
	AVERAGE NUMBER OF PIECES OF LUGGAGE CARRIED		AVERAGE NUMBER OF PERSONS ACCOMPANYING PASSENGERS TO AIRPORT	
RESIDENTS		2.29		.85
VISITORS		2.96		.88
BUSINESS PASSENGERS		2.22		.54
NON-BUSINESS PASSENGERS		3.03		1.11
CALIFORNIA PASSENGERS		2.08		.78
DOMESTIC AND INTERNATIONAL PASSENGERS		3.11		.94
ALL PASSENGERS		2.70		.87

Per departing air passenger party.

Percentage of Non-Business Trips by Day of the Week



Average Number of Persons Accompanying Air Passengers to Airport by Day of the Week



2. Ground Origin Information

F San Francisco County generates 33.5% of the passengers, including residents and visitors, who originate in the nine-county MTC region. Santa Clara, San Mateo, and Alameda Counties are the next largest generators of air travel, producing 18.5%, 16.3%, and 16.2% of the region's passengers respectively.

S Recommendations contained in the Regional Transportation Plan for the development of passenger and airport access facilities at the Bay Area airports will be based to a large extent on the origins of air passengers within the region.

F The North Bay Counties of Marin, Napa, Solano, and Sonoma generate 8.9% of the passengers originating in the Bay Area, including residents and visitors.

S The MTC, in cooperation with the local governments in the North Bay, will be attempting to determine if and when existing airports should be developed to provide airline service to cities within California.

F By and large, the origination pattern of resident air passengers has changed very little in the last 7-8 years. Santa Clara, Alameda, San Mateo, and San Francisco Counties are the largest generators of resident air travelers, producing 25.0%, 19.8%, 18.7% and 17.1% of the travelers originating in the nine-county Bay Area respectively. Santa Clara County continued to generate about 25% of the travel by residents of the Bay Area.

S Regional travel projections had indicated that population and employment growth in the South Bay would result in an increasing proportion of travel demand from this area. Apparently this has not happened.

F The origination pattern of visitors has, however, changed during this period, notably in the threefold increase in the share of visitor traffic to Marin and San Mateo Counties.

S A possible explanation may be the attraction of Marin County for summer vacationers and the proliferation of hotels and motels in San Mateo County conveniently located with respect to San Francisco Airport.

F About 58% of all Bay Area passengers leave for the airport from a personal residence, 26% from a hotel or motel, 12% from a business location and 4% from some other type of location.

S The importance of transit services connecting the region's central business areas to the airports is not as great as previously thought due to the relatively low percentage of passengers who leave for the airport from a business location. In addition to the fact that the density of residences, hotels and motels, and businesses within the region may provide a means to model the distribution of passenger traffic, the type of origin from which the passenger leaves for the airport affects his choice of ground access mode.

F = Finding
S = Significance

Service Area for Bay Area Airports

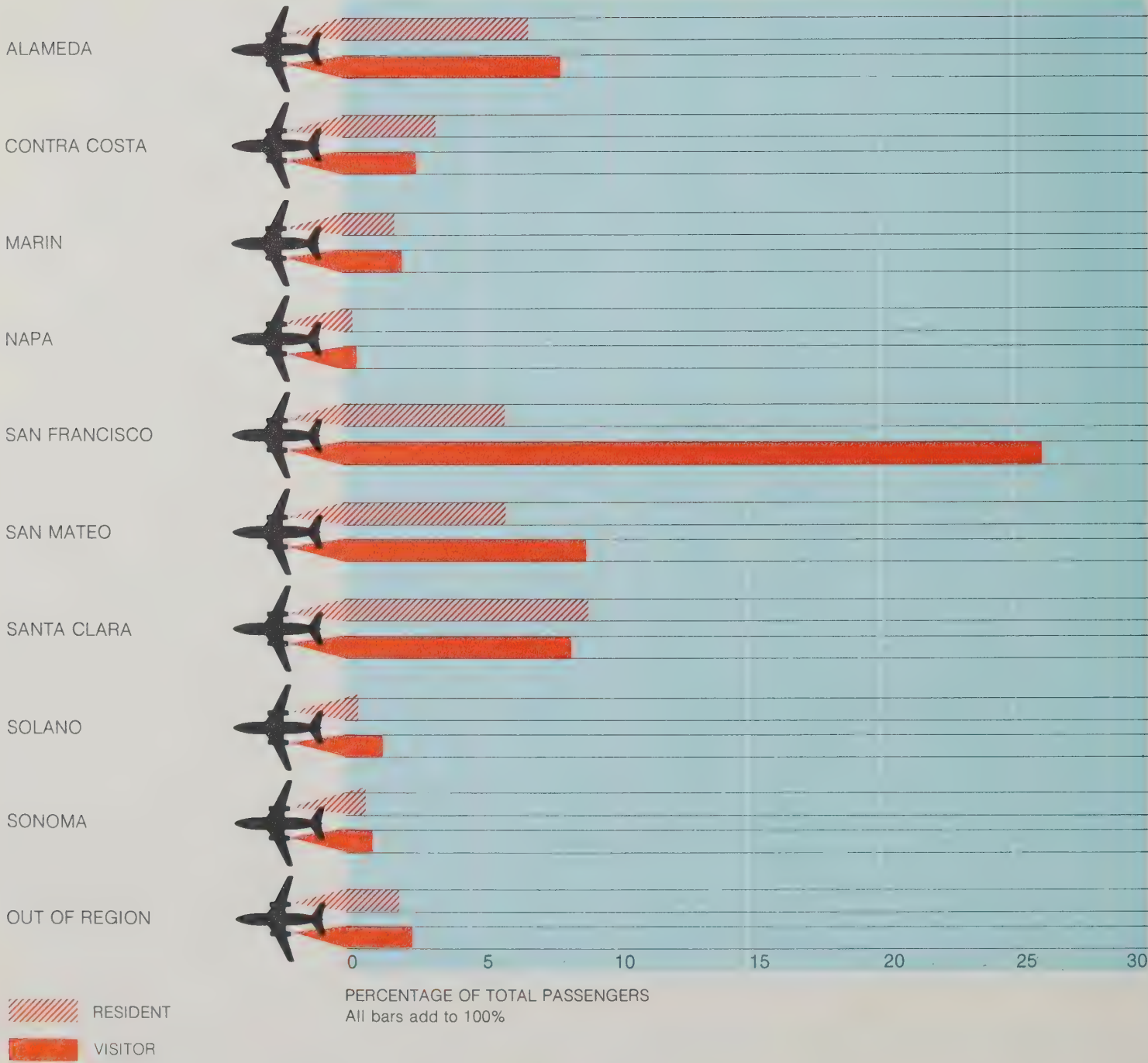


Origins of Air Passengers by County



Includes both residents and visitors

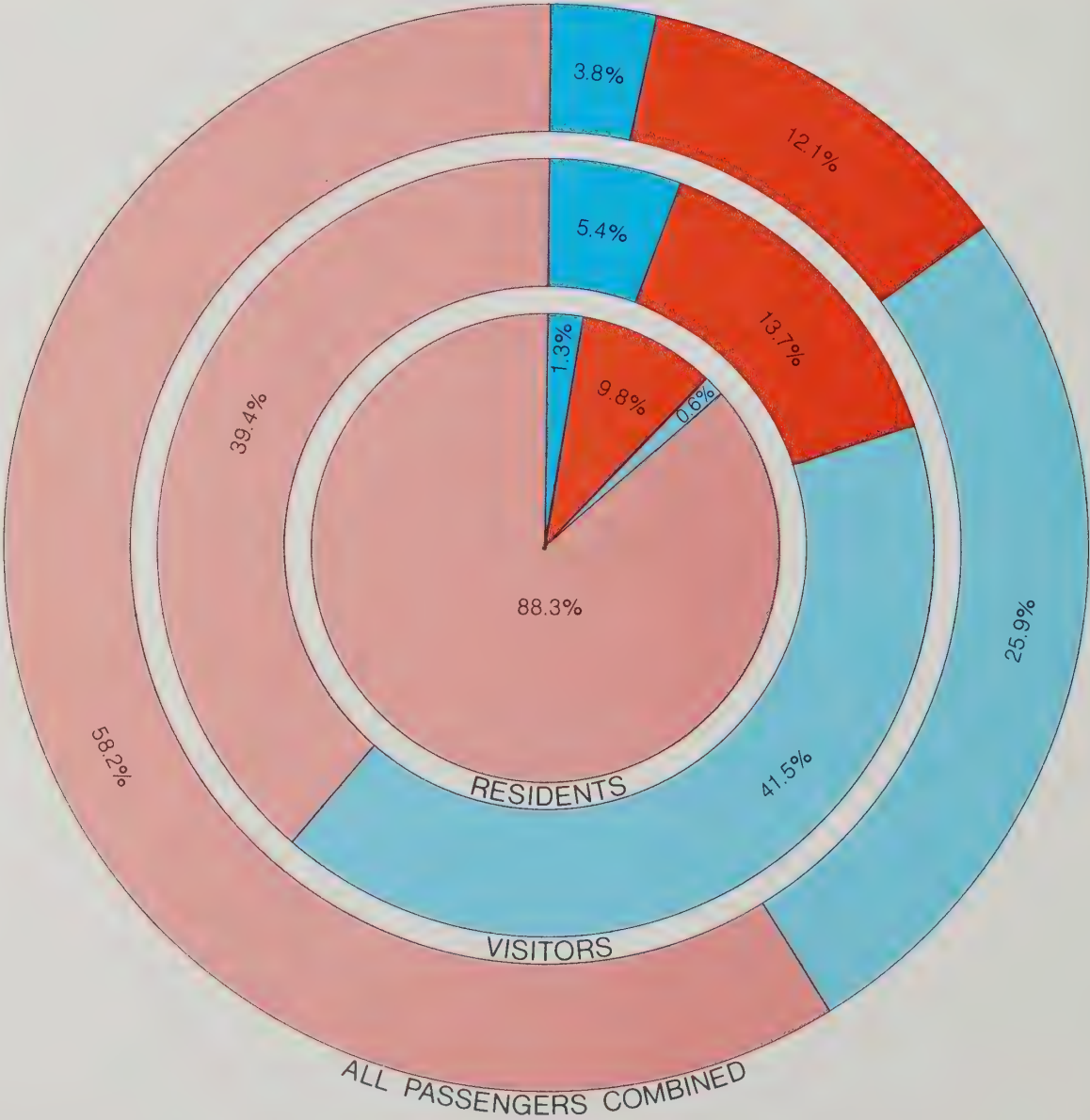
Origins of Resident and Visiting Air Passengers by County



Origins of Business and Non-Business Trips by County



Type of Origin for Residents and Visitors



- PERSONAL RESIDENCE
- BUSINESS LOCATION
- HOTEL/MOTEL
- OTHERS

3. Airport Service Areas

F In 1975, San Francisco Airport served 78.3% of the Bay Area traffic, Oakland Airport 10.6% (including supplemental carriers), and San Jose Airport 11.1%.

S The proportion of traffic served by San Francisco Airport has changed very little since 1969; however, the relative share of the remaining traffic served by Oakland and San Jose Airports has changed during this period. Regional plans anticipate that Oakland and San Jose Airports will serve increasingly larger shares of the Bay Area travel in order to provide more convenient service to air passengers and also to reduce vehicle-miles-of-travel to the airports.

F Residents of the East Bay (Alameda and Contra Costa Counties) and South Bay (Santa Clara County) generate 29.5% and 24.3% respectively of the total travel by Bay Area residents to the Domestic and International markets. Only about a third of this traffic is currently served at Oakland and San Jose Airports.

S While the Southern California market is served by frequent flights at all three airports, many domestic flights can only be obtained at San Francisco Airport. Expansion of service in the major domestic markets at San Jose and Oakland would help to serve the demand identified above.

F Sixty-one percent of the passengers at San Francisco Airport originate in San Francisco and San Mateo Counties. About 90% of the traffic at Oakland Airport originates in Alameda and Contra Costa Counties. A similar percentage of San Jose Airport passengers originate in Santa Clara and adjacent counties outside the region (primarily Santa Cruz and Monterey).

S Because of the many unique flights offered at San Francisco Airport, the effective service area extends well beyond the adjacent counties, and even as far as Sacramento, Monterey and Mendocino Counties.

F San Francisco serves 90% of the passengers from the North Bay Counties of Marin, Napa, Solano and Sonoma.

S It was thought that Oakland Airport would serve a greater portion of demand from the North Bay because of the frequent service provided in the California market and its accessibility relative to San Francisco Airport.

F Only 33% of the passengers flying out of San Francisco Airport were residents compared to 50% at Oakland Airport and 56% at San Jose Airport.

S Because of the name recognition of San Francisco Airport and the predominance of San Francisco/San Mateo County destinations, many out-of-state visitors will continue to use San Francisco Airport in the future.

F The survey showed that 18.8% of the passengers using San Francisco Airport were connecting passengers. The regional average was 15.1%.

S In planning future access system capacity requirements, connecting passengers are usually excluded since these passengers do not leave the airport terminal. Connecting passengers use the Bay Area airports to transfer between flights.

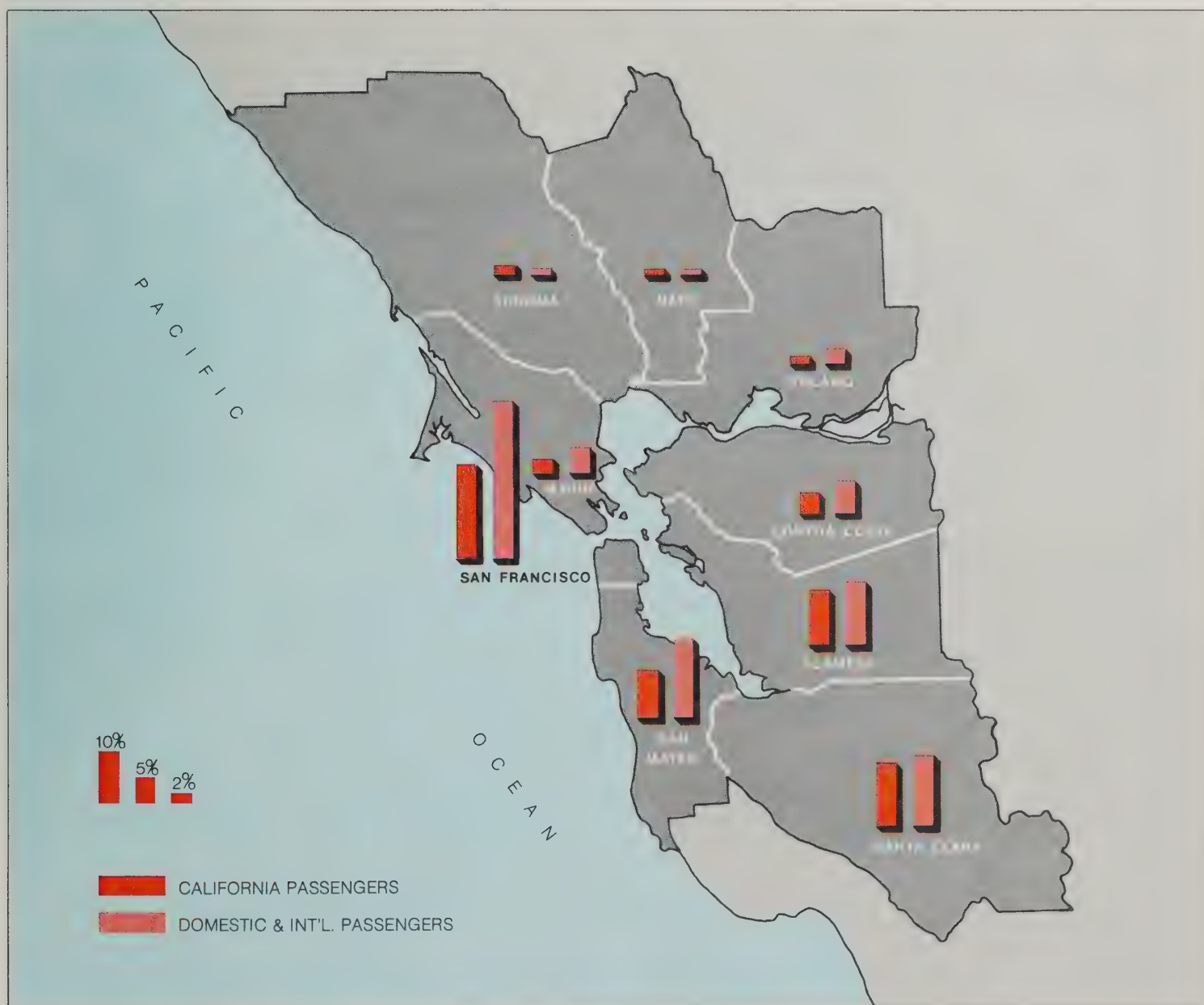
F = Finding

S = Significance

Origin of Passengers to Individual Airports



Origins of California and Domestic and International Passengers by County



Includes both Residents and Visitors

All bars add to 100%

4. Airport Selection Process

F Closeness of the airport to their home was the predominant reason given by residents for choosing an airport when traveling to California destinations. Some residents perceived that San Francisco Airport had better scheduling. Oakland and San Jose Airports were rated high by residents in terms of convenience of access and parking.

S When competitive airline services are available at all three airports — such as in the California market — residents generally choose the airport closest to their homes. The reason for the “Better Scheduling” response at San Francisco would appear to be due to more convenient arrival and departure times to some California destinations as well as exclusive service to others, such as to Bakersfield, Fresno, Redding, etc.

F Of the responses given by residents taking Domestic and International flights from San Francisco Airport, 31% indicated “Closest to Home” as the primary reason and 38% indicated “Better Scheduling” was a prime factor.

S The high response in the “Better Scheduling” category is again indicative of the present airline service patterns where many flights can only be obtained at San Francisco Airport. To a lesser extent, this response also reflects non-stop versus one-stop service, better return schedules, and better connecting service at another hub airport.

F Less than 10% of the passengers indicated that closeness to work was a prime factor in their selection of airports.

S This finding, when considered along with the previous finding that only about 12% of the air passengers leave for the airport from a business location, would tend to decrease the importance of the central business district and other business areas as a major origin of access travel to the airports.

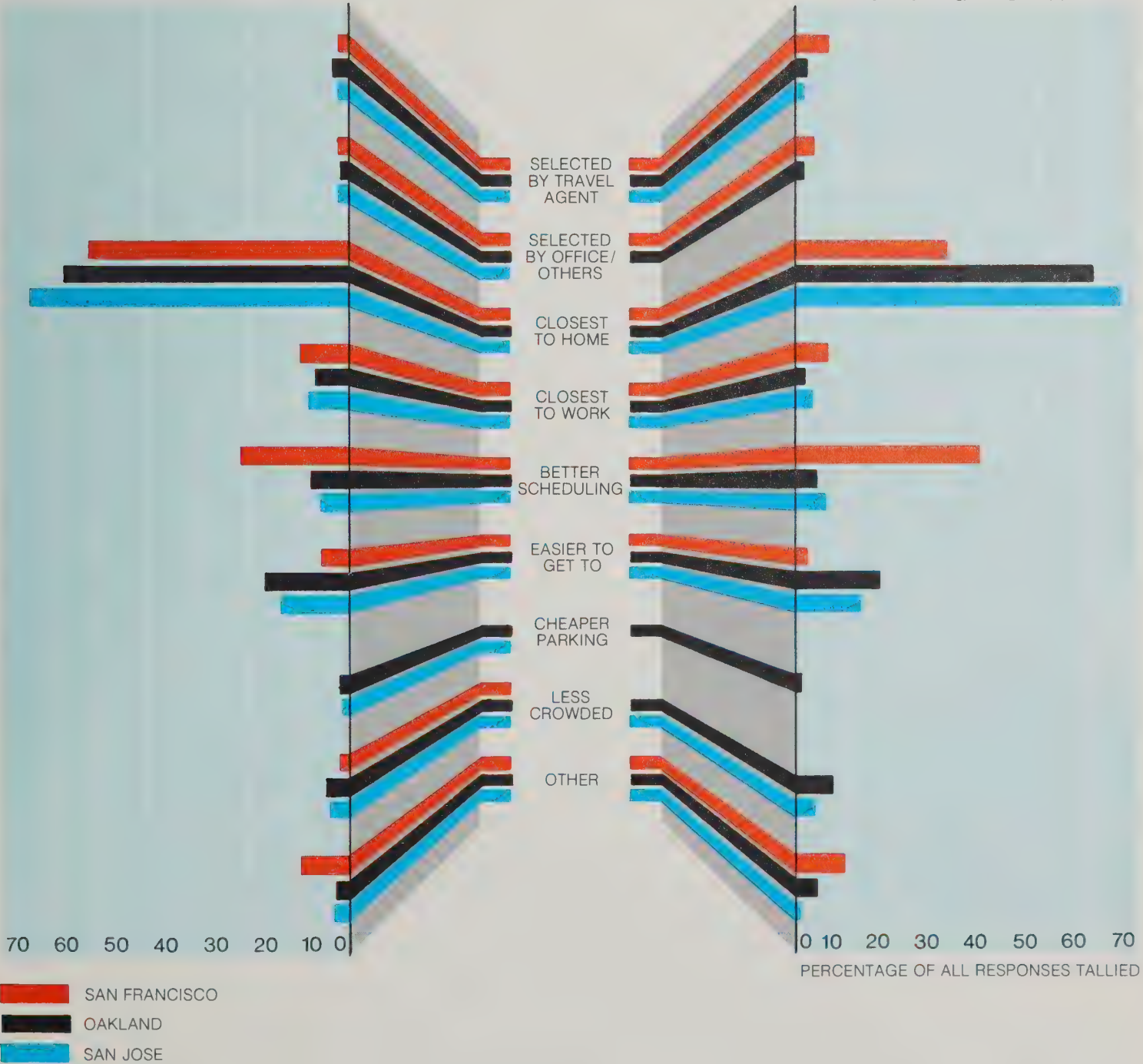
F = Finding

S = Significance

Reasons Given by Residents for Choosing Airports

CALIFORNIA PASSENGERS

DOMESTIC & INT'L.PASSENGERS



All similar colored bars add to 100%

5. Access Mode Usage

F Counties having the highest transit utilization to the airports are San Francisco (30% of the air passengers from San Francisco County use transit), Solano (30%) and Marin (11%). The counties having the highest automobile usage are Contra Costa (84%), Sonoma (79%) and Santa Clara (77%).

S The proportion of passengers using transit to the airports from each county is directly related to the availability and convenience of transit services.

F On a region-wide basis, 83% of the trips made to the airports are made by automobile (hotel/motel courtesy cars and mini-buses are included in this category), 14.6% of the trips are made by bus and 1.4% of the trips are made by air. The automobile was used for 98.5% of the access trips to San Jose Airport, 92.5% of the trips to Oakland Airport, and 79.2% of the trips to San Francisco Airport.

S Regional policies advocate a goal of providing sufficient capacity to accommodate 25% of the airport trips by employees and air passengers by transit. Because of the concentration of traffic with origins or destinations in downtown San Francisco, transit service to San Francisco Airport is quite effective and captures about 18% of the airport access trips to that airport.

F Several relationships both expected and unexpected were observed regarding access mode usage.

EXPECTED

- The personal car is used more extensively on weekends. This is directly related to the fact that there are greater numbers of well-wishers accompanying the air passenger to the airport on weekends.
- Visitors rely heavily on rental cars, taxis, buses, and hotel/motel courtesy cars for transportation to the airports — 52% of the visitors use these forms of transportation compared to only 12% of the residents.
- Business passengers also use rental cars and taxis extensively.

- Direct relationships exist between household income and use of the personal car, rental car, and public bus.

- Passengers using air, or public or franchised limousine bus service had few people accompanying them to the airport. Passengers arriving at the airport in a personal car had the most persons accompanying them to the airport.

UNEXPECTED

- The personal car is used for a large portion of airport access trips during morning hours of peak congestion on the highways. The use of the automobile declines in the midday and increases again into the evening. It would appear that congestion on the highways is not yet a major deterrent to the use of the automobile for access. Also the availability of airport parking at various times of the day probably has a major influence on the choice of mode.

- There is no major difference in access mode usage between California and Domestic and International passengers.

- Lower income groups showed a high utilization of taxis.

- Persons using Airport Limousine transit carried a fairly high number of bags, which would indicate that luggage may not be a deterrent to transit use after all.

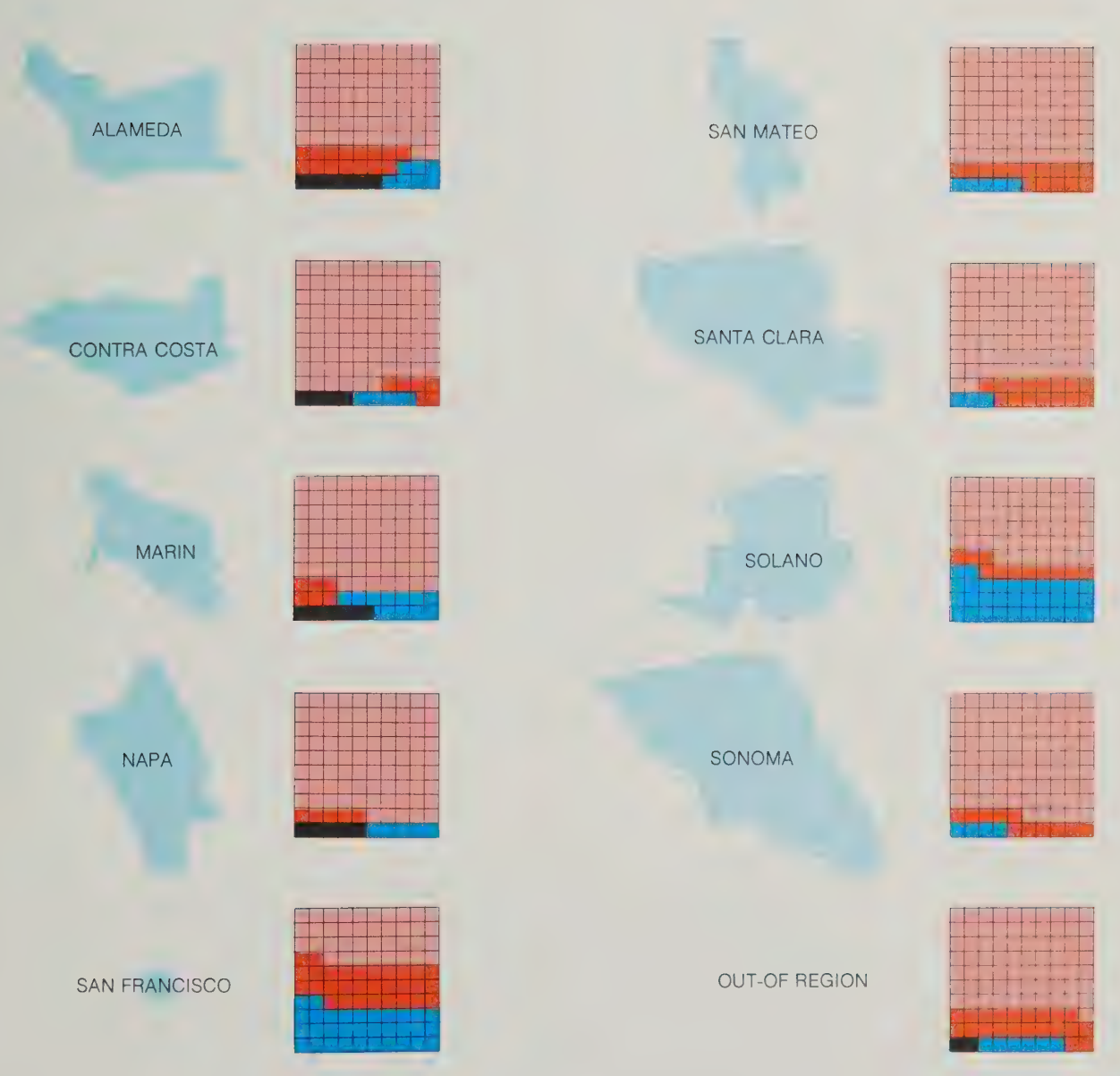
- Passengers arriving in a personal car carried considerably less luggage on the average than those arriving in taxis and rental cars.


S The potential market for transit service to the airports has been categorized into the following overlapping areas: 1) Passengers unaccompanied by well-wishers, 2) Passengers with a small amount of luggage, 3) Visitors who are transit dependent, 4) Lower income travelers, 5) Business travelers (because of the small amount of luggage carried), and 6) Intra-California passengers (because of the small amount of luggage carried). Future evaluations of new transit services to airports will rely on established access mode usage relationships for estimating their potential effectiveness.





F = Finding

S = Significance

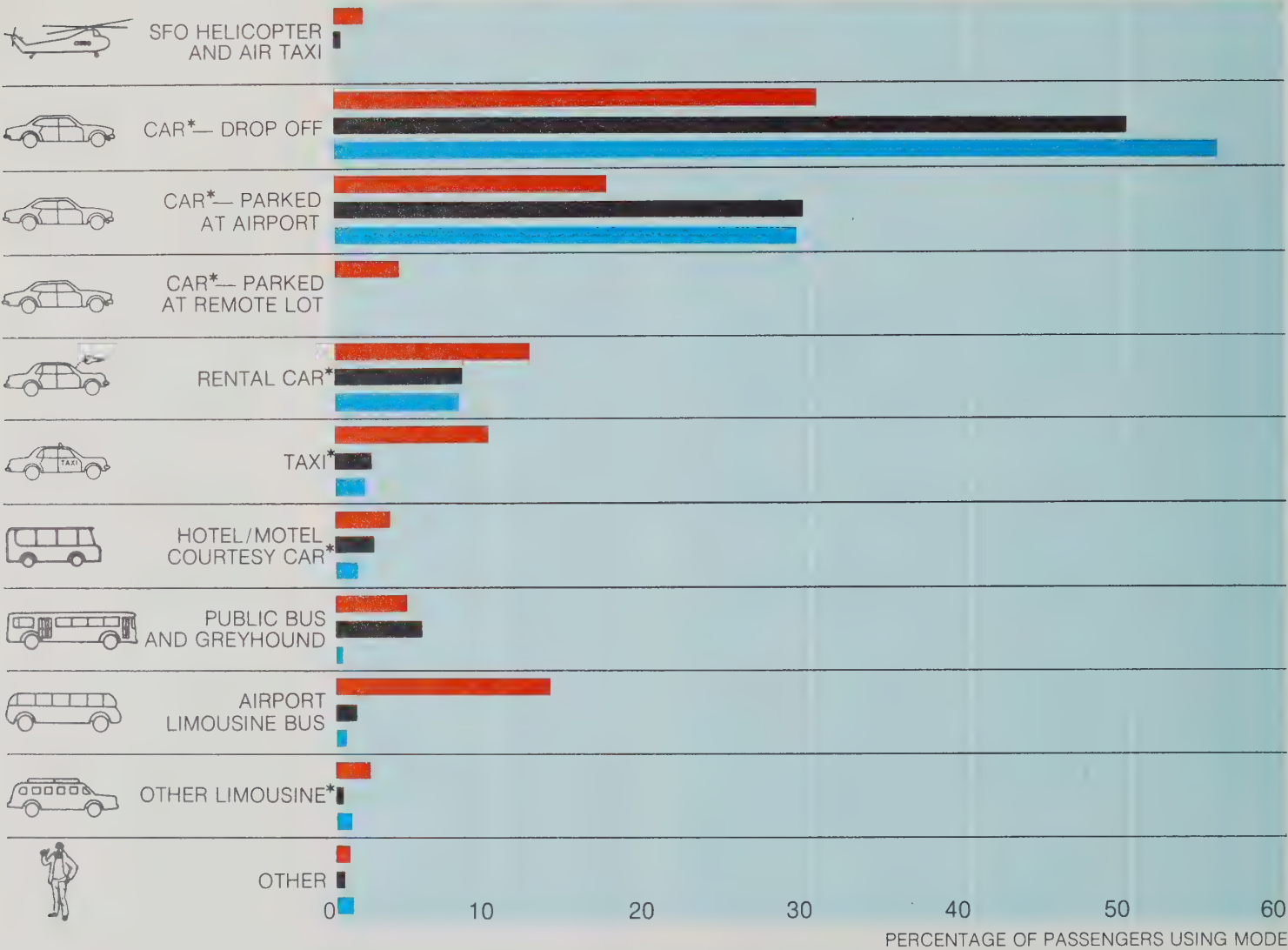
Access Mode Usage by County



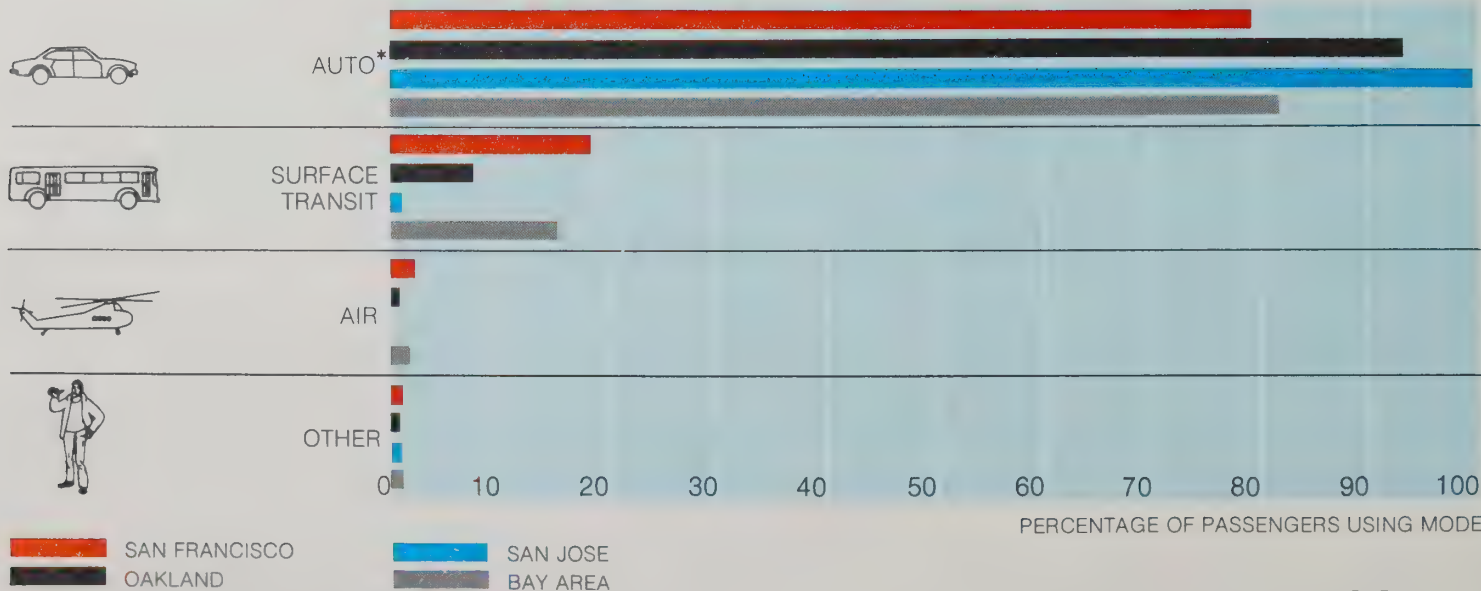
Each  equals 1% of trips from county

- PERSONAL AUTO 
- RENTAL CAR & TAXI 
- SURFACE TRANSIT 
- SFO HELICOPTER & AIR TAXI 

Access Mode Usage by Airport

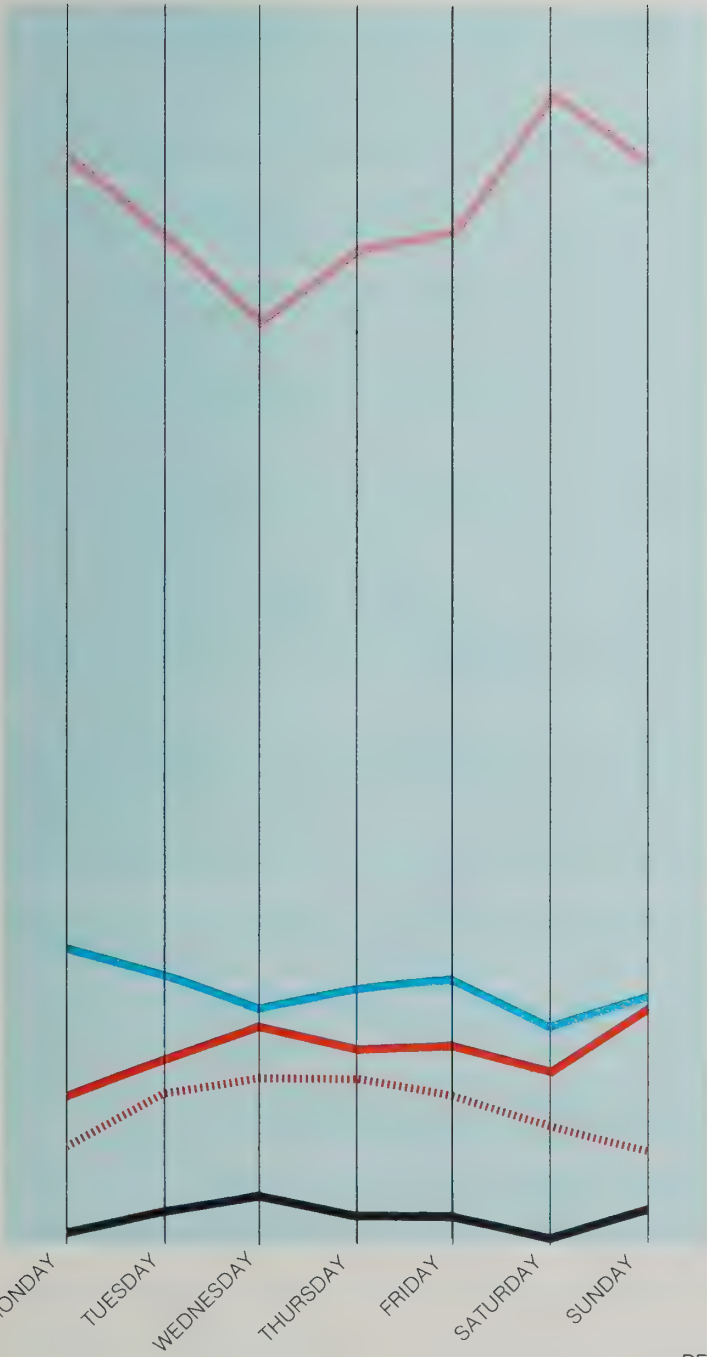


Access Mode Usage Summary

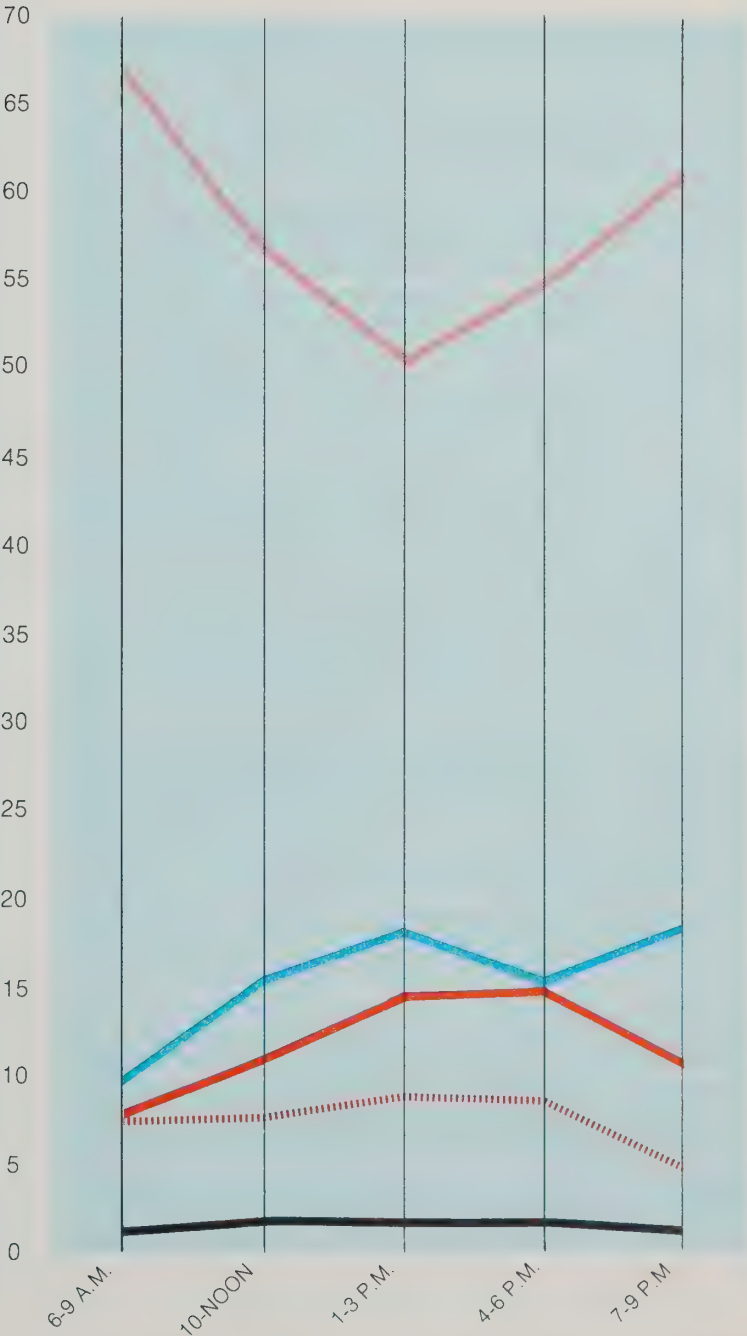


Percentage of passengers using BART for part of their trip to San Francisco Airport: 1.1%, to Oakland Airport: 4.8%

Access Mode Usage by Day of the Week



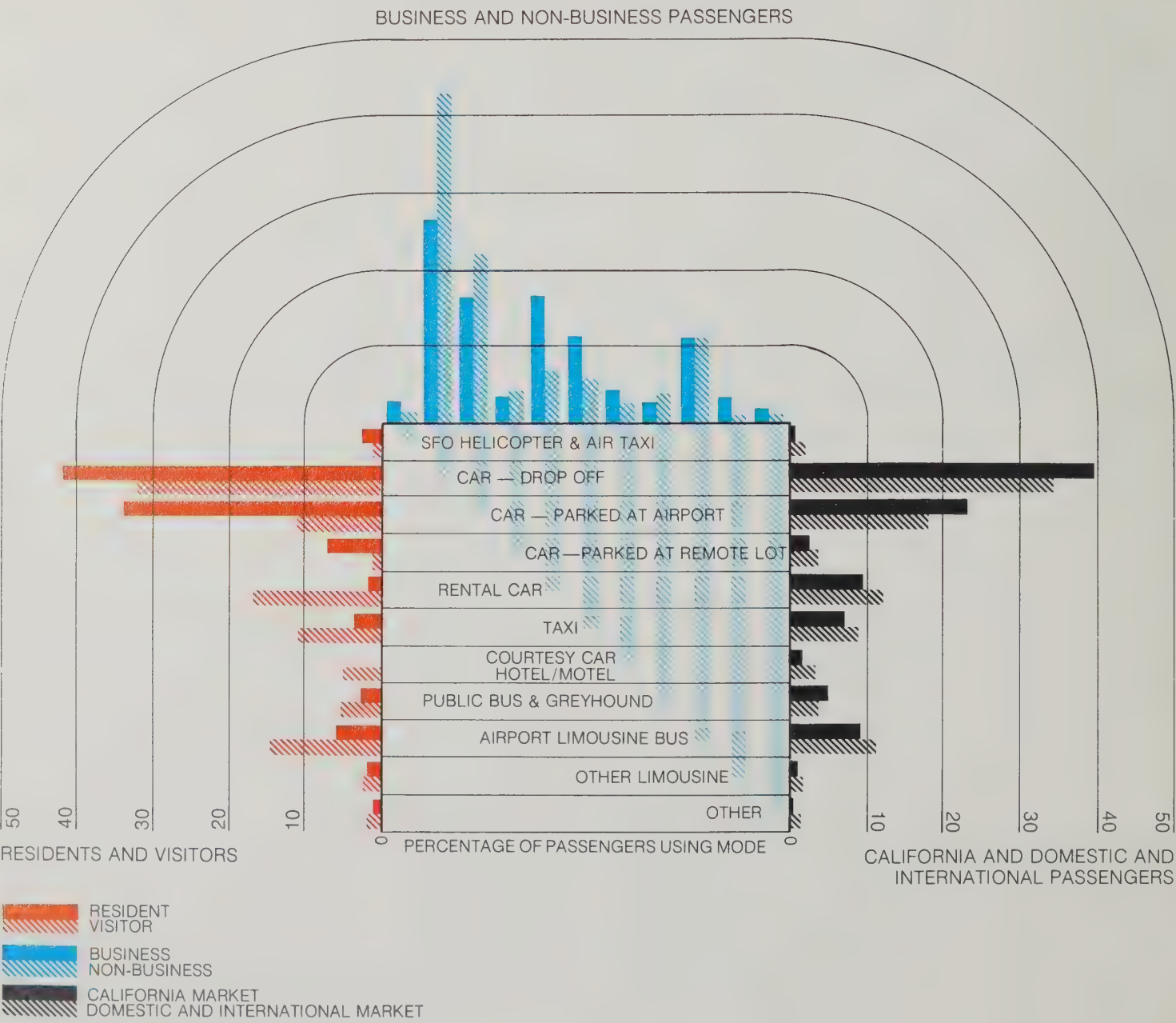
Access Mode Usage by Time of Day



PERCENTAGE
OF PASSENGERS
USING MODE

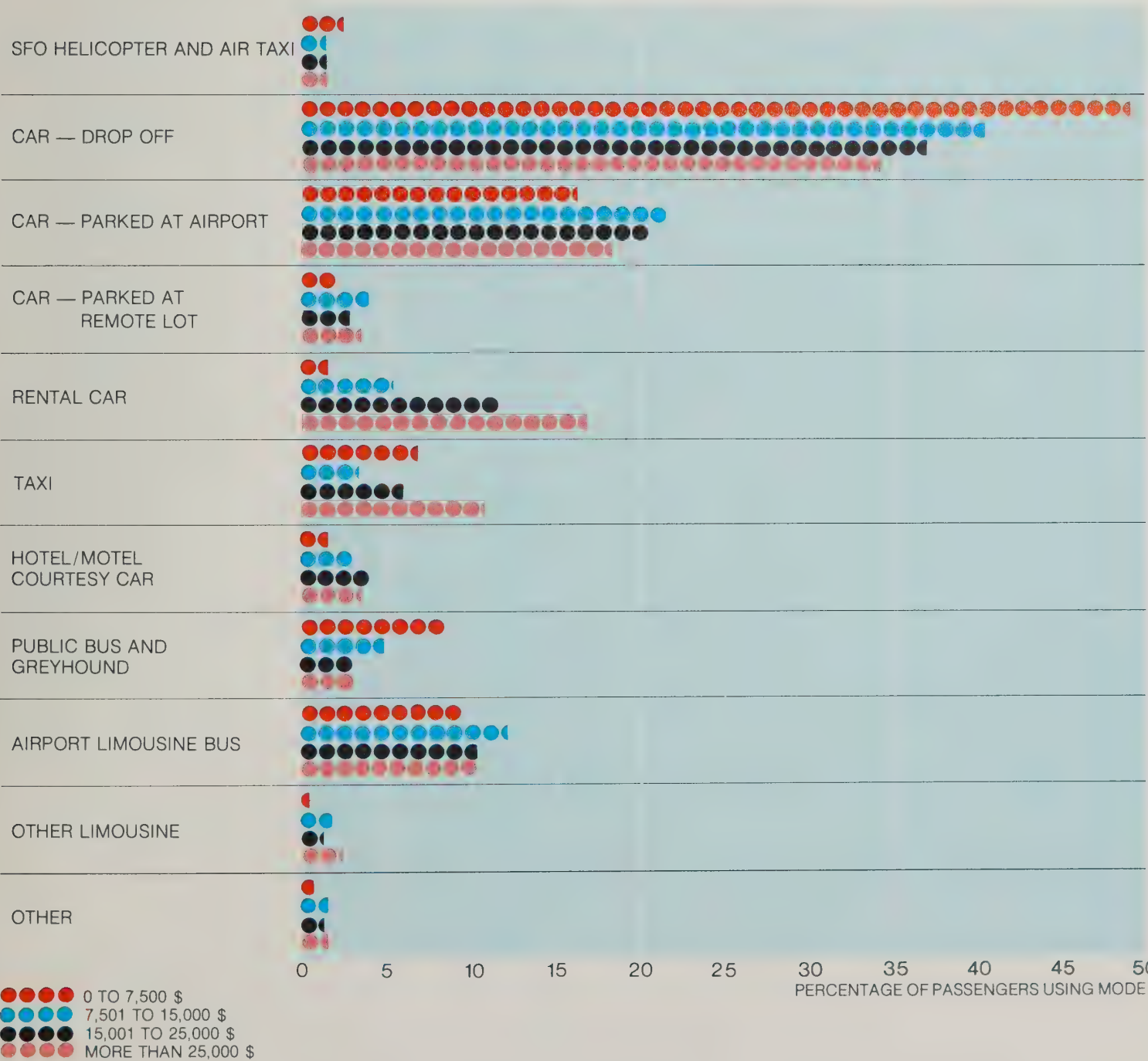
- PERSONAL AUTO
- SURFACE TRANSIT
- RENTAL CAR
- TAXI CAB
- SFO HELICOPTER & AIR TAXI

Access Mode Usage by Type of Passenger



All similar colored bars add to 100%

Access Mode Usage as a Function of Household Income Levels



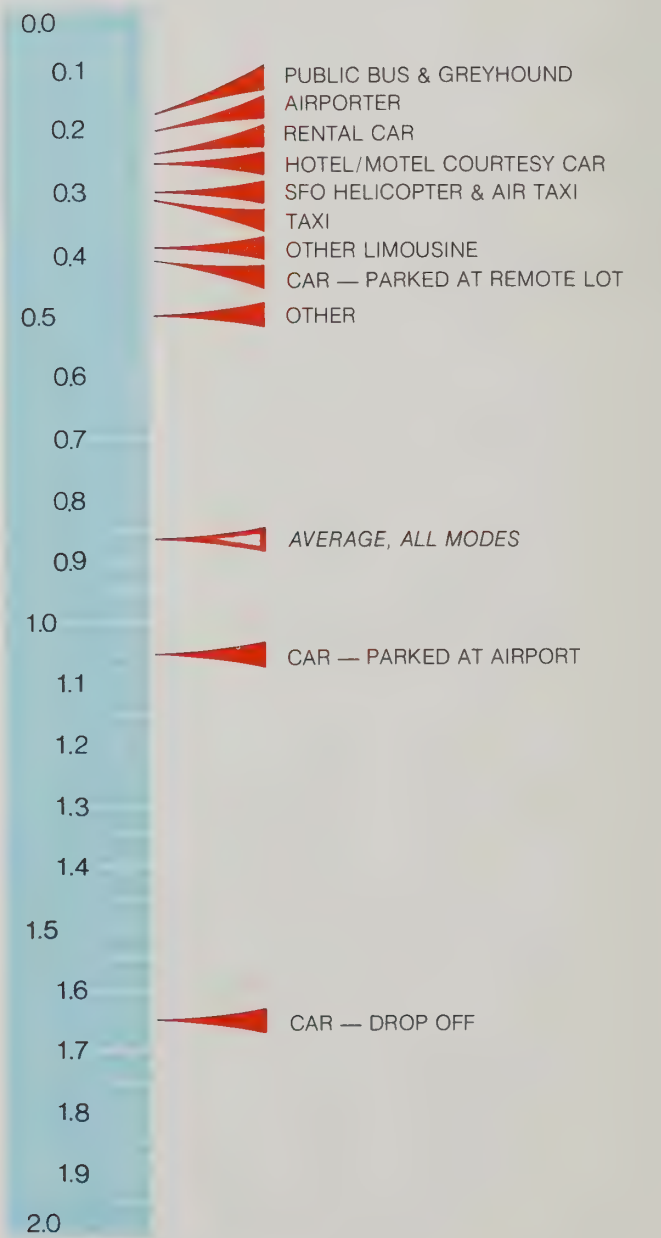
All similar colored bars add to 100%

Average Number of Pieces of Luggage Carried by Access Mode



Per departing air passenger party.

Average Number of Persons Accompanying Air Passengers to Airport by Access Mode



Airport Service Area The geographic area from which air passengers using an airport originate. Service areas are defined at the county level in this report.

Air Travel Zone The geographic area which includes the final destination of the air passenger's trip. Depending on the volume of traffic, air travel zones may consist of individual airports, one or more states, an entire country or group of countries. Examples are Chicago (O'Hare Airport), Arizona-New Mexico, Canada, and Europe, respectively.

Bay Area The Bay Area consists of the nine counties bordering the San Francisco Bay — Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, and Sonoma.

Business Trip A trip conducted for business purposes, including military orders.

California Market The California market is defined to consist of all airport destinations within the boundaries of the State of California.

Connecting Passenger A connecting passenger is a passenger who flies into the Bay Area on a major airline and who only uses the Bay Area airport for the purpose of transferring between flights.

Domestic and International Market The Domestic and International market is defined to consist of all airport destinations outside the boundaries of the State of California.

Expansion Factor The ratio of the total number of persons in a category to the number of survey records obtained in the category.

Mode A mode is a means of conveyance to the airport including the personal automobile, bus, limousine, courtesy car, helicopter, walking, etc.

Non-Business Trip A non-business trip is one which is being conducted for any of the following reasons: vacation or tourism, traveling on personal business or emergencies, visiting friends or relatives, personal travel to institutional centers including student travel to and from school, military travel on leave, and travel by wives or husbands accompanying spouses on business trips.

Resident A passenger who is currently living in the nine-county Bay Area or adjacent counties which are served by the Bay Area airports. Residents include military personnel stationed in the Bay Area and students attending school in the Bay Area.

Sample Base The particular segment of the population from whom travel information is collected.

Stratified Sample A procedure that involves dividing the sample base into groups and then selecting independent samples from each stratum based on characteristics of that stratum.

Visitor A passenger who lives outside the nine-county Bay Area and outside the adjacent counties served by the Bay Area airports.

Comparison of Actual Number of Interviews Obtained With Desired Sample Size

AIR TRAVEL ZONE	AIRPORT						AIR TRAVEL ZONE	AIRPORT					
	SAN FRANCISCO		OAKLAND		SAN JOSE*			SAN FRANCISCO		OAKLAND		SAN JOSE*	
	DESIRED	ACTUAL	DESIRED	ACTUAL	DESIRED	ACTUAL		DESIRED	ACTUAL	DESIRED	ACTUAL	DESIRED	ACTUAL
1	1039	912	327	428	364	727	20	65	81	1	0	1	3
2	50	0	0	0	0	0	21	64	71	4	13	2	20
3	89	46	2	0	7	4	22	131	231	5	3	3	41
4	133	134	24	31	25	47	23	156	205	13	72	13	90
5	82	132	20	47	23	33	24	58	27	3	6	2	8
6	107	108	4	1	3	7	25	30	63	2	3	1	4
7	69	59	9	32	15	24	26	105	90	8	35	7	50
8	80	39	11	12	8	27	27	295	204	6	16	3	20
9	86	93	6	31	4	17	28	59	72	2	2	1	10
10	44	42	0	5	1	5	29	27	42	1	5	1	8
11	91	117	10	57	13	58	30	80	88	2	4	1	5
12	111	149	11	18	18	41	31	69	49	3	11	4	24
13	55	94	4	0	4	71	32	146	259	11	23	11	93
14	120	79	7	3	4	20	33	37	26	1	2	4	11
15	69	111	3	1	1	3	34	50	22	1	2	1	3
16	61	61	0	0	3	23	35	81	56	0	0	0	3
17	47	28	4	17	5	38	36	16	15	0	0	0	0
18	33	56	0	0	0	0	37	38	18	2	2	1	2
19	72	64	3	4	5	7	38	13	3	0	0	0	0
TOTALS								4019	4015	510	886	559	1547

*For their own purposes, San Jose Airport conducted a very extensive survey during the week of August 18 to August 24, 1975. These interviews represent about 20% of the total number of interviews obtained by San Jose Airport.

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Survey Questionnaire

MTC AIR PASSENGER SURVEY QUESTIONNAIRE

DATE	HOUR	AIRLINE	FLT.	M	F	
						1/1-18
1. What is your FINAL airport destination today?						1/19-21
2. Is this PRIMARILY a business trip? Yes <input type="checkbox"/> No <input type="checkbox"/>						1/22
3. How many flights FROM the Bay Area have you made in the last 12 months						1/23-25
for Business? <input type="checkbox"/>						1/26-27
for Non-business? <input type="checkbox"/>						
4. What form of transportation DID YOU JUST USE to arrive at this airport today?						
(CHECK ONLY ONE)						
<input type="checkbox"/> Major Airline INTERVIEW COMPLETE <input type="checkbox"/> Taxi Cab						1/28-29
<input type="checkbox"/> SFO Helicopter or Air Taxi <input type="checkbox"/> Hotel/Motel Courtesy Car						
<input type="checkbox"/> Private car driven away by others <input type="checkbox"/> Greyhound or Public Bus						
<input type="checkbox"/> Personal car parked at this airport <input type="checkbox"/> Airporter, AirporTransit or Airports						
<input type="checkbox"/> Personal car parked at Off-Site Park n' Ride <input type="checkbox"/> Other Limousine						
<input type="checkbox"/> Rental Car <input type="checkbox"/> Other						
5. Was BART used for any part of your trip? Yes <input type="checkbox"/> No <input type="checkbox"/>						1/30
6. How many people accompanied you today who will not take this flight?						1/31-32
7. How many pieces of luggage are you taking including carry on and luggage of those accompanying you?						1/33-34
8. Do you LIVE in the San Francisco Bay Area? Yes <input type="checkbox"/> No <input type="checkbox"/>						1/35
YES / RESIDENTS						
9. What is your home address?						1/36-55
Street address or nearest intersection						1/56-60
ZIP Code (LAST RESORT)						1/61-64
City						
10. From what address did you just leave for the airport? Same as above <input type="checkbox"/>						2/6
Street address or nearest intersection						2/7-26
ZIP Code (LAST RESORT)						2/27-31
City						2/32-35
11. Was this location						2/36
<input type="checkbox"/> Your home or residence <input type="checkbox"/> A business you were visiting						
<input type="checkbox"/> Home of friend or relative <input type="checkbox"/> Hotel/Motel						
<input type="checkbox"/> Your place of employment <input type="checkbox"/> Other						
12. Which of the following best represent your main reasons for choosing this airport?						2/37 (1st)
SHOW CARD						2/38 (2nd)
<input type="checkbox"/> A. Selected by travel agent <input type="checkbox"/> E. Better airline scheduling						
<input type="checkbox"/> B. Selected by Office or others <input type="checkbox"/> F. Easier to get to or more convenient parking						
<input type="checkbox"/> C. Closest airport to HOME <input type="checkbox"/> G. Cheaper parking						
<input type="checkbox"/> D. Closest airport to WORK <input type="checkbox"/> H. Less crowded						
<input type="checkbox"/> I. Other						
NO / NON-RESIDENTS						
13. From what address did you just leave for the airport?						2/39-58
Street address, intersection, or building name						2/59-62
City						
14. Was this location						2/63
<input type="checkbox"/> Home of friend or relative <input type="checkbox"/> A business you were visiting						
<input type="checkbox"/> Your place of employment <input type="checkbox"/> Hotel/Motel						
<input type="checkbox"/> Other						
15. In what location did you conduct your PRIMARY activity while in the Bay Area?						2/64-67
City						
Oth. Loc. ID						
16. Which of the letters on this card best approximates your annual household income (yourself plus other family members living with you)? SHOW CARD						2/68
<input type="checkbox"/> A. Less than \$7,500						
<input type="checkbox"/> B. More than \$7,500 but less than \$15,000						
<input type="checkbox"/> C. More than \$15,000 but less than \$25,000						
<input type="checkbox"/> D. More than \$25,000						
Interviewer I.D.						2/69-71

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